robotex International

AVIATION ACADEMY DRONE RACE
BEGINNER LEVEL

COMPETITION COORDINATOR

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Contents

1 Introduction

Autonomous flying robots must navigate in an obstacle course.

2 The Field

1. The field is an area that is at least 11 m long, 5 m wide and 2,5 m high and surrounded by a safety net.
2. On the field, there are 4 walls.
3. In the walls there are at least 1500 x 1000 mm (width x height) rectangular holes at different heights.
4. The location of the holes in the walls is not predefined which means that the robot must detect the walls and move through the holes without touching the wall.
5. Maximum size of a wall is 1800 x 2500 mm.
6. The colour of the walls is dark brown or black.
7. The field ground is a dark coloured carpet or rubber mat.
8. There is a white 50 mm indicative line on the field.

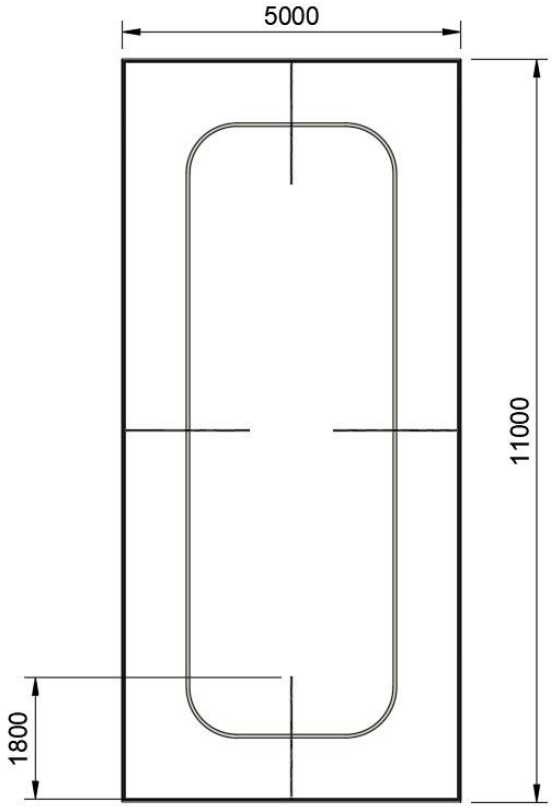

Figure 1: Top view of the competition field.

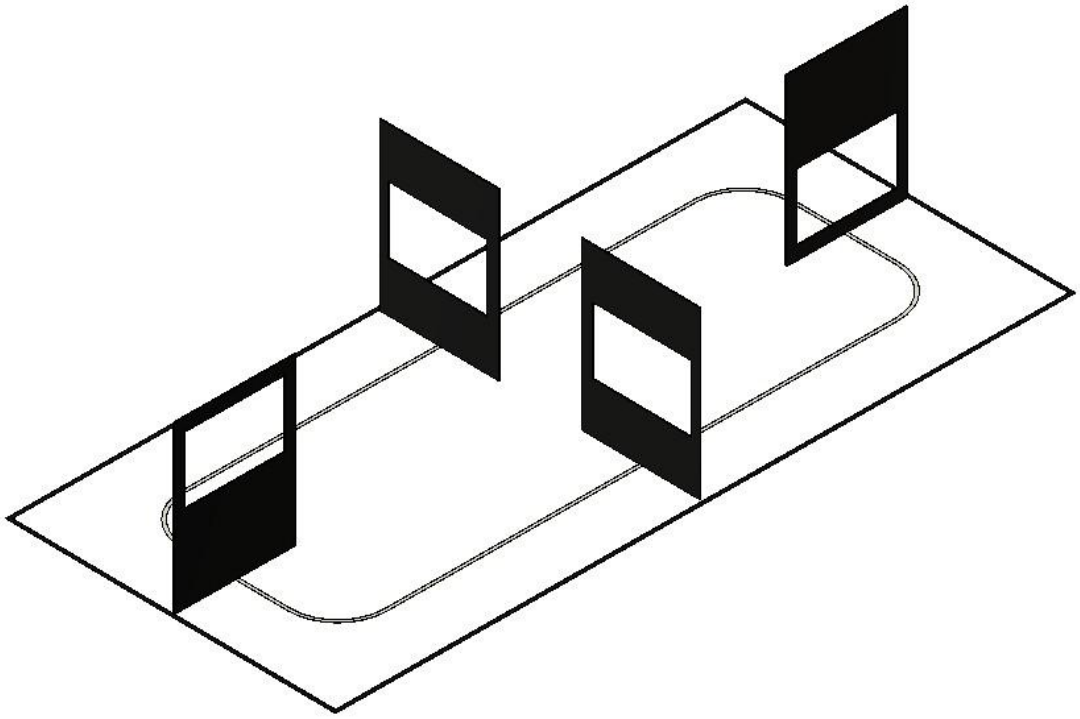

Figure 2: 3D view of the competition field.

3 The Robot

1. The robot must be autonomous.
2. The robot must be an airborne vehicle that is able to fly at the height of 0,3 - 3 m. The vehicle can have stiff wings, rotors, moving wings or an airship-like design.
3. The craft must not exceed a maximum speed of 10 m/s.
4. The craft may weigh up to 2 kg and its dimensions may be up to 80 x 80 x 80 cm.
5. For navigation, the robot may use instruments that follow the white line drawn on the field, active or passive navigation devices or other means.
6. Maximum of four active and/or passive navigation devices can be used. Navigation devices must be placed in the corners of the field.
7. Active navigation devices must run on batteries.
8. Navigating equipment must be set up during the preparation.
9. The robot must not have any sharp or potentially hazardous parts, except for propellers and rotors.
10. Only non-flammable gases are allowed for the steady flight of the robot.
11. For safety considerations, the team must be able to take manual control of the robot at any given moment.

12. All different robot platforms are allowed if they meet the requirements set for therobot in Paragraph 3 “The Robot”.

4 The Competition

1. A team can have up to 3 people.
2. Each lap in the right direction gives 1 point.
3. The robot that earns the most points wins the competition.
4. Lap count begins once the robot passes the first start wall in the right direction. Start wall and lap direction is determined prior to competing by the referee.
5. The robot must pass the field without touching the walls, net or the floor.
6. During the flight the robot must stay between 0,5 - 3 m of height.
7. The team and the robot have 10 minutes to earn points.
8. Each team has 5 minutes to prepare the robot.
9. During the preparation, only one team member may enter the flying course.
10. At the start of the race, the robot is placed on front of the selected start wall. The distance how far the robot is put from the wall may be chosen by the competitor.
11. When the team is ready or 5 minutes have passed, a starting signal is given.
12. The time measurement starts from the start signal.
13. For safety, the team member must leave the course for the duration of the flight.
14. The flight is over when the robot touches the walls, ground or the safety net or when the team decides to stop the flight.
15. During the 10 minutes that are given for each attempt, multiple starts are allowed. One team member may enter the course and restart the robot, if given permission by the referee.
16. When the robot is restarted, the score will be reset.
17. An attempt ends, when 10 minutes have passed or if the referee stops the attempt.
18. If the robot performed multiple flights during the attempt, the flight that earned the most points will be counted as the result.
19. In the case of equal scores, the robot who earned the points faster, wins.

5 Organizing

1. The robot must be registered before the competition, and a technical inspection will be conducted. The robot will be marked with a number and the order of racing will be drawn.
2. The technical inspection must be passed by the time set by the organizers.
3. Any questions or problems are solved by the referee.
4. The final decision regarding any appeals is made by the referee and/or the organizers. All complaints must be reported to the referee during the match or right after the ending of the match. Complaints filed later will not be accepted. The final decision regarding any disputes or inconsistencies is always made by the referee.
5. The arena has at parts uneven lighting and infrared noise, which may disrupt the work of sensors during the competition. For this reason, the organizers recommend using covers or blinds for sensors, testing the sensors under intense lighting conditions or even under direct sunlight to imitate the lighting conditions of the competition arena.
6. If the winners' team has three members, next year they should have at least one new member who was not previously on this team to compete in the same category again instead of taking a year off from it. This rule is aimed at bringing new people, giving everyone a fair chance and encouraging recurring winners to try new competitions they usually do not participate in and to educate and engage new beginners in the field of robotics. *

   *** The rule complies only with Robotex International standards and is used for Robotex International competition**.

6 Changes and cancellations in the rules

Changes and cancellations made to the rules are adopted by the main organizer of the competition, according to the regulations of the regulatory committee of the competition.

7 Revision history

1. 30.05.2022 Paragraph 4 clause 12. Specified time measurement.
2. 05.10.2025 Added new rules to paragraph 5.